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No. II.

IMPROVED MODE OF CASTING SCREWS.

The SILVER MEDAL was presented to Mr. WILLIAM BOWSER, 4 Swan Street, Minories, for his improved Method of Casting Screws; a Model to illustrate which has been placed in the Society's Repository.

4 Swan Street, Minories,
November 5, 1841.

SIR,

HAVING had the satisfaction of completing a process in the manufactures which I believe to be entirely new, I wish to present it to the Society of Arts and Manufactures, so that I may receive their approval in any way they may think proper.

I should esteem it an additional favour, if you would appoint a time for me to wait upon you respecting it, or send me the necessary directions as to the method of bringing it before your Society.

I am, Sir, &c. &c.

*To the Secretary of the
Society of Arts.*

WILLIAM BOWSER, jun.

Breezer's Hill, Ratcliff,
Dec. 17, 1841.

SIR,

THE bearer, Mr. William Bowser, is desirous of obtaining the approbation of the Society for his invention of casting a screw, which I believe is entirely new and shews considerable ingenuity, and I think entitles him to some mark of consideration.

I am, Sir, &c. &c.

W. A. GRAHAM, Esq.
Secretary, &c. &c.

JOHN HALL.

4 Swan Street, Minories,

SIR,

Dec. 18, 1841.

HAVING been compelled to delay forwarding the drawings, as desired in your favour of the 6th ultimo, till the present time, I now beg respectfully to do so.

The plan may appear as though adapted only to this particular pattern, but I beg to observe that, by removing the part marked in the drawings DD and fixing it to the movable plate HH, and then adjusting the pattern in the first operation, it becomes universal in its application to the object proposed, viz. casting screws with square threads, &c. of any size, and which could not be effected by any division of the mould.

I am, Sir, &c. &c.

W. A. GRAHAM, Esq.
Secretary, &c. &c.

WILLIAM BOWSER, jun.

I have had it in practice, at our manufactory, 50 Parsons Street, Wellclose Square, and find it answer the purpose fully, and should be happy to furnish a specimen.

The difficulty of casting square-threaded screws by the ordinary method is owing to the nature of the spiral curve of the thread, which, presenting its angle of inclination parallel with the axis in opposite directions on each side thereof, prevents the possibility of removing the pattern without displacing some of the sand. To remedy this defect, Mr. W. Bowser has contrived a plan by which the patterns of square-threaded screws may be withdrawn from the sand and still leave perfect impressions for casting.

Instead of using only two flasks in casting any particular pattern, Mr. Bowser forms the mould for the screw in three flasks, two of which contain the upper and lower halves of the mould for the body of the screw, and the third one that for the mould of the head.

A metal plate of size sufficient to cover the end of the two long flasks when placed together, is attached to them, and has in its centre a screw-nut which holds the pattern screw in its right position in the sand, at the division of the two halves, to form the required mould.

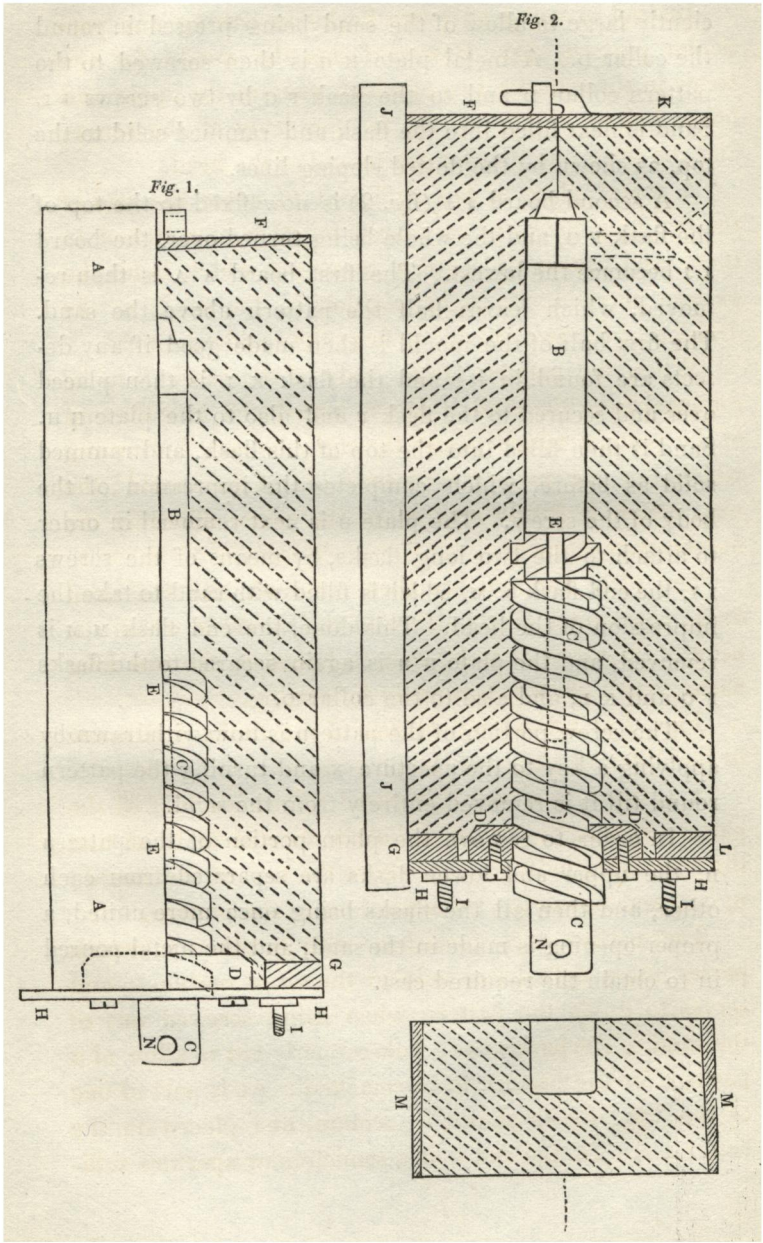
When the pattern of the body of the screw is to be removed from the sand, a key is introduced into the end of the pattern which passes through the nut, by turning which key the pattern is screwed out of the mould; the nut, which is firmly secured to the plate, affording the necessary resistance.

The plate and nut are then removed, and the third flask, containing that portion of the mould in which the head of the screw is to be cast, is joined to the two long flasks, when the whole is ready for casting.

Figs. 1 and 2 exhibit sections of the flasks and screw in the different stages of the process.

A A, fig. 1, is a board prepared to receive half of the pattern screw, by having a hollow formed in it, so that the remaining half projects above the top of the board; B, C C, and D, are the three portions of the pattern.

The portion B is furnished with a pin E E, which passes into a cylindrical hole in the screw portion C, and serves to guide the pattern when being screwed out of the sand. The part D has a hole properly cut to allow of a passage for the pattern to be removed. F G is part of one of the long flasks shewn in section, and placed on the board A A. In the end G is a semicircular aperture suffi-



ciently large to allow of the sand being pressed in round the collar *D*. A metal plate *HH* is then screwed to the pattern collar *D* and to the flask *FG* by two screws *II*. Sand is next filled into the flask and rammed solid to the top, as shewn by the dotted sloping lines.

A second board *JJ* (fig. 2) is now fixed to the top of the flask *FG*, and the whole being turned over, the board *JJ* becomes the lowest. The first board *AA* is then removed, which leaves half the pattern above the sand. The first half of the mould is then made good if any defects are found in it; and the flask *KL* is then placed over and secured to the flask *F* and also to the plate *HH*. Sand is then filled into the top of this flask, and rammed solid as before, which completes the impression of the body of the screw. The plate *H* is next removed in order to attach to the two long flasks, by means of the screws *II*, the end flask *MM*, which is filled with sand to take the impression of the head. This done, the end flask *MM* is removed, and the plate *HH* is again secured to the flasks *FG* and *KL*, and also to the collar *D*.

The screw portion of the pattern is now withdrawn by applying a key to the aperture *N* and turning the pattern round till it is removed entirely from the sand.

In order to remove the plain portion of the pattern *B*, the upper and lower flasks are separated from each other, and then all the flasks being once more united, a proper opening is made in the sand, and the metal poured in to obtain the required cast.